

WHAT IS CLAIMED IS:

1. A method of monitoring the level of optical power in an optical waveguide comprising the steps of:

enclosing a length of the optical waveguide within an insulated cavity;

5 measuring the temperature  $T_1$  within the cavity;

measuring the temperature  $T_2$  outside the cavity; and

determining the level of optical power in the waveguide based on the temperature difference  $T_1 - T_2$ .

14 2. The method of claim 1 wherein the temperature  $T_1$  is measured over the length of waveguide.

15 3. The method of claim 1 wherein the temperature  $T_2$  is measured over the length of the waveguide.

4. The method of claim 1 wherein the optical waveguide comprises an optical fiber and the walls of the cavity comprise a groove within a substrate and a lid.

5. Apparatus for monitoring the level of optical power in an optical waveguide comprising:

a substrate and lid forming therebetween an elongated insulated cavity for containing the optical waveguide, the cavity having a cross sectional area less than twice that of the waveguide;

20 a first temperature sensor for measuring the temperature along the waveguide within the cavity; and

a second temperature sensor for measuring the temperature along the waveguide outside the cavity.

6. The apparatus of claim 5 wherein the waveguide comprises an optical fiber and the cavity comprises a groove in the substrate.
7. The apparatus of claim 5 wherein the substrate comprises monocrystalline silicon.